

Assessment Questions

This guide helps with...

Using the ART Assessment Questions to collect data and information that will inform your characterization of vulnerability and consequences for the assets, systems of assets, sectors and services addressed in the project.

Definitions: Assessment Questions

The ART assessment questions provide a framework for collecting the data and information that lead directly to the identification of vulnerabilities, consequences, and key planning issues. These assessment questions, which have been tested and refined in a number of previous assessments, can be applied to a variety of asset categories, sectors and services, and to a number of different asset scales, with little customization. Answers to the questions help build an understanding of the underlying causes and components of vulnerability and the potential consequences of those vulnerabilities on society and equity, environment and economy.

Don't wait for exposure!

It is not necessary to analyze the exposure of the project area or assets to the selected climate impacts before answering the assessment questions because they do not require understanding when or how assets will be exposed. If understanding exposure becomes critical to initiating the assessment, there are, for most locations, adequate planning-level maps available to inform the extent and timing of climate impacts.

Steps to using the ART assessment questions:

1. Get familiar with the assessment questions and the types of vulnerability and consequence findings that these questions have revealed in the ART program
2. Develop an approach for answering the questions
3. Gather answers to assessment questions
4. "Ground truth" answers with asset managers, owners, and topic experts

1. Get familiar with assessment questions and example findings

Types of Assessment Questions

The ART assessment questions are grouped according to those that describe existing conditions, the different types of vulnerabilities often observed, and consequences. This organization – referred to as the ART classifications – simplifies translating the information into vulnerability and consequence statements later on. The types of ART questions are listed below with a few examples for each. Note that the term “asset” refers collectively to an asset, a system of assets, a sector or a service. The assessment questions, grouped by various asset types, are available to download as spreadsheet in the **ART Assessment Questions Supplement**, in the **ART Portfolio: Design Your Project** and at the **ART Supplies** page.

Existing Conditions: Describes the asset and highlights current conditions or stressors that could affect its vulnerability.

- Where is the asset located?
- What is its function?
- Who owns and manages it?

Information: Determines if data or information is lacking, incomplete, poorly coordinated, or difficult to access.

- What types of information sources for the asset(s) are publicly available?
- What is the quality of available information?
- What types of mechanisms exist to share information between owners of connected infrastructure?

Functional: Considers the function of the assets and their relationship to or dependence on other assets.

- What services does the asset rely on?
- Is it physically connected to other assets such that failure in one part of the system disrupts the entire system?
- Does the asset provide functions or services that are limited?

Physical: Identifies conditions or design aspects that make an asset particularly vulnerable to impacts.

- Is the asset co-located with other assets?
- Are water- or salt-sensitive components of the asset located at- or below-grade?

Governance: Identifies challenges with management, regulatory authority or funding options for adapting to impacts.

- What plans, procedures, etc are in place to manage the assets?
- What types of permits are needed to make changes?
- What funding sources exist that can be used for adaptation?

Consequences: Informs how climate change may impact society and equity, the economy and environment.

- Does the asset serve vulnerable communities or critical facilities?
- Are hazardous materials at the asset site that could pose a risk to the environment?
- What is the scale of the economic costs if the asset were to experience service disruptions or damage?

Example Findings

In addition to reviewing the questions themselves, review the relevant, summarized vulnerability and

consequence findings from the ART program. These findings were developed using the assessment questions, and reviewing them will enable your project staff, working group members and others who are providing assessment information to understand the types of vulnerabilities and consequences that are likely to be revealed by the assessment questions. Two sources of these examples are available in the ART Portfolio:

- Summarized, high-level (i.e., sector-scale) vulnerability and consequence findings from the ART Project in Alameda County, CA are included along with the assessment questions in the **ART Assessment Questions Supplement**.
- Examples of sector and asset profile sheets from past ART projects are provide in Appendix A.

2. Develop an approach for answering the questions

Before diving into the work of gathering answers to the assessment questions, consider which assets will be evaluated and to what extent. Depending on the type and number of assets being considered it may not be possible or reasonable to collect detailed answers for each. In addition, if one agency or organization owns or manages a number of different assets it can be difficult to decide how to collect the answers: e.g., for all of the assets collectively or for each asset separately.

Remember that the assessment questions are a tool to guide the collection of targeted information that can then be summarized in different ways, e.g., for individual assets; agencies or organizations; watersheds or focus areas within the project area, etc. Ultimately, the approach will depend on the scope of the project as well as the type of asset.

For each type of asset, identify whether the assessment questions will be answered for representative or specific

Representative vs. Specific Assets

REPRESENTATIVE ASSETS

Answering the assessment questions for a smaller number of representative assets works well for numerous, similar assets. For example, vulnerabilities and consequences of climate impacts to numerous contaminated sites within a project area may be very similar. Rather than assess each site individually, answering the questions for a few examples that represent a cross-section of the types of contaminated sites can reveal the range of vulnerabilities and consequences that are likely. Other types of assets that can be addressed with this approach often include schools and local roads.

SPECIFIC ASSETS

Unique assets for which the findings from the assessment questions are unlikely to carry over from asset to asset need to be addressed individually. Examples of these types of assets include wastewater treatment plants, and tidal creeks and flood channels. Additionally, if the project scope includes only a small number of assets, the assessment questions should be answered for each of these specifically.

assets, recognizing that it may be necessary to modify the approach for certain assets depending on input from the working group and other stakeholders, availability of information and preliminary findings as the assessment progresses.

3. Gather answers to the assessment questions

In gathering answers to the assessment questions it is often necessary to use a number of approaches, including research to uncover readily available reports, documents, inspection and monitoring reports, and maps. The **ART Assessment Questions Supplement** includes a worksheet, “Asset Info Sources” with a list of asset types and useful information and data sources.

Gathering the information to answer the assessment questions is a balancing act. On the one hand, it may be helpful to check in with asset managers, owners or topic experts early on in the process to make sure that you are aware of and using recommended data and information sources. However, it is important not to seek significant input on the questions without having made a diligent effort to gather information and answer them as much as possible. It can be challenging for your stakeholders and other experts to generate complete answers from scratch, and it is far easier and more efficient for them to help refine answers or provide additional, specific resources to fill information gaps. Keep in mind answers are typically a few sentences to a paragraph long. It is okay if the answer uncovers further, specific challenges that need to be further investigated.

Gathering answers: Keep looking? Stop and ask?

Some questions can be answered with data and information that is readily available, while others will require much more effort or cannot be answered through research. It can be difficult to know how much effort to expend when answering an assessment question with or without assistance from the asset manager. Below are a few examples of topics and questions for which the ART Program has had to rely on information and best professional judgments provided directly from asset owners and managers.

- Land subsidence at the site of the asset.
- Detailed information about asset management: e.g., types and frequency inspections and maintenance conducted, major repairs and upgrades.
- Has the asset been disrupted in the past due to an unplanned event e.g., weather-related closure, emergency repair or improvement, work strike, or other event?

In the **ART Assessment Questions Supplement** the ART team has noted questions that tend to be require input from asset owners and managers. Avoid spending the effort to uncover hard-to-find, or in some cases nonexistent information. Instead, flag critical data needs and knowledge gaps that will require further consideration or research.

When gathering information make sure to use the assessment question sheets to keep track of sources, including if information is provided through personal communications. Knowing where and when the information was collected and by whom is very helpful later on when validating the assessment findings, and it is critical for maintaining transparent decision-making in the project.

4. Ground truth answers with asset managers, owners, and topic experts

It is important to confirm, or ground truth preliminary assessment answers with asset managers, owners, and topic experts. There are a number of approaches that can be used to solicit input as efficiently as possible, including;

- written surveys
- individual or small group meetings
- phone interviews
- field visits
- collaborative websites (e.g., Google docs)

Prior to do any of these approaches to get input from an asset manager or owner or topic expert, it is helpful to provide them with any preliminary assessment information already gathered. Rather than giving them the assessment questions and “raw” answers themselves, the ART Team has found that asset managers and owners tend to respond better and more effectively when the preliminary information has been summarized in draft profile sheets. **How-to Guide: Profile Sheets** The questions on their own can be overwhelming, whereas the summarized information on the profile sheets provides context for why certain information (questions) are helpful to understanding vulnerability and consequence. Additionally, be sure to provide them with enough background on the assessment objectives if they are not already familiar with the project.

Since input on the preliminary assessment answers is partially based on best professional judgment, it may be that others besides those participating directly in the working group have the necessary knowledge or expertise. It is often helpful to ask for assistance in engaging colleagues, co-workers, others in the field, community members and non-profit organizations to gather needed information. Lastly, be sure to ask if there are any additional data or resources available that can help fill in knowledge gaps. If there are none then make sure to note this data need or knowledge gap as an information challenge.